

Amendments to Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Original) In an independent automated semiconductor specimen fabrication station that includes processing components which perform programmed fabrication processing operations on a semiconductor specimen in a protected environment and is constructed to interface with ancillary equipment coupled to the fabrication station within an allowable spatial envelope specified by industry standards, one of the processing components including a specimen handling device for transporting semiconductor specimens to and from processing components of the fabrication station, a method of integrating onto the fabrication station a process diagnostic tool to allow it to perform on the semiconductor specimen a processing operation that otherwise would not be performed by the processing components to thereby make the fabrication station more efficient and flexible to use, comprising:

positioning the process diagnostic tool in registration within the allowable spatial envelope of the fabrication station to effect an interface in compliance with the specified industry standards;

causing the specimen handling device to provide to the process diagnostic tool a specimen device previously presented to the fabrication station for processing but not undergoing a current operation performed by the processing components of the fabrication station; and

coordinating control of process operations performed by the fabrication station and the process diagnostic tool so that they perform separate process operations on different semiconductor specimens previously presented to the fabrication station for processing.

2. (Original) The method of claim 1, in which the process diagnostic tool includes a specimen parameter measurement system or a specimen inspection system.
3. (Original) The method of claim 1, in which the industry standard specifying the allowable spatial envelope is a front-opening interface mechanical standard (FIMS) and in which the fabrication station includes a FIMS load port having kinematic mounts arranged to receive a front-opening unified pod (FOUP).
4. (Original) The method of claim 3, in which the process diagnostic tool is configured to mount on the FIMS load port and fits within the allowable spatial envelope.
5. (Original) The method of claim 1, in which the specimen handling device is mounted for translational movement to deliver the specimen to or remove the specimen from the process diagnostic tool in a manner that does not interrupt in-progress operation of the processing components of the fabrication station.
6. (Original) The method of claim 1, in which a processor located external to the fabrication station receives and processes data acquired by the process diagnostic tool during its operation.
7. (Currently amended) An apparatus for manufacturing a semiconductor device, comprising:
 - a) a semiconductor fabrication tool, for processing semiconductor wafers; and,
 - b) a pod, interfaced to said tool at a load port, wherein said pod includes a mechanism for inspecting or measuring said wafers;
 - c) wherein the apparatus is configured to cause a specimen handling device to provide to the mechanism a wafer previously presented to the tool for processing but not undergoing a current operation performed by processing components of the tool; and
 - d) wherein the apparatus is further configured to coordinate control of processing operations performed by the tool and the mechanism so that they perform separate process operations on different wafers previously presented to the tool for processing.

8. (Currently amended) A method of making a semiconductor device, comprising:
- a) inspecting a semiconductor wafer in a pod, wherein said pod is coupled to a load port of a semiconductor fabrication tool; ~~and~~
 - b) processing said wafer in said tool;
 - c) causing a specimen handling device to provide to the pod a wafer previously presented to the tool for processing but not undergoing a current operation performed by processing components of the tool; and
 - d) coordinating control of process operations performed by the tool and the pod so that they perform separate process operations on different wafers previously presented to the tool for processing.
9. (Previously presented) A pod for loading wafers into a process tool, comprising:
- a) an interface coupling said pod to a load port of said tool;
 - b) a mechanism for inspecting said wafers;
 - c) connections to said pod to provide power to said pod, to command said pod, and to transfer inspection data from said pod.
10. (Currently amended) A computer-controlled system for collecting and processing semiconductor inspection data, comprising:
- a) at least one pod interfaced to a load port of a semiconductor fabrication tool, wherein said pod includes an apparatus for inspecting a semiconductor wafer;
 - b) a memory for storing data derived from inspecting said wafer;
 - c) a processor, coupled to said memory, for processing said data; and
 - d) a connection to said pod, said processor and said memory for transferring said data from said pod;
 - e) wherein the system is configured to cause a specimen handling device to provide to the apparatus a wafer previously presented to the tool for processing but not undergoing a current operation performed by processing components of the tool; and

f) wherein the system is further configured to coordinate control of process operations performed by the tool and the apparatus so that they perform separate process operations on different wafers previously presented to the tool for processing.

11. (Currently amended) A method of monitoring the functionality of a plurality of semiconductor process tools, comprising:

- a) connecting a pod to a load port of a first one of said process tools, said pod being configured to inspect semiconductor wafers;
- b) using said pod, inspecting wafers processed by said tool;
- c) disconnecting said pod from said first tool, and connecting said pod to a load port of a different one of said tools; and
- d) connecting a second pod to the load port of said first tool, wherein said second pod is not configured to inspect semiconductor wafers;
- e) causing a specimen handling device to provide to the pod a wafer previously presented to the first one or the different one of said process tools for processing but not undergoing a current operation performed by processing components of the first one or the different one of said process tools; and
- f) coordinating control of process operations performed by the first one or the different one of said process tools and the pod so that they perform separate process operations on different wafers previously presented to the first one or the different one of said process tools for processing.

12. (Original) The method of claim 8, wherein said pod is compatible with a FOUP.

13. (Previously presented) The method of claim 8, wherein said pod is further coupled to said process tool through a kinematic mount.